Monographs Editor: Arnold J. Levine

Arnold J. Levine, a professor in The Simons Center for Systems Biology, School of Natural Sciences, Institute for Advanced Study, is a leading authority on the molecular basis of cancer and co-discoverer of the p53 tumor suppressor protein, one of the body's most important defenses against many forms of cancer.

Levine first isolated the p53 protein in 1979. P53 was originally thought to be an oncogene, or tumor accelerator, but Levine and his colleagues later showed that it is, in fact, a tumor suppressor—it prevents cancer. Other scientists went on to show that a mutation in p53 is the single most common genetic change in human cancers, including those of the breast, lung, colon, prostate, and bladder. Levine and colleagues characterized and identified a version of p53 in the fruit fly, an important model organism for the study of a host of human diseases, including cancer. And Levine is a pioneer in the use of DNA microchip arrays, which can analyze the interactions of thousands of genes at one time, to study cancer.

Born in Brooklyn, New York, Levine received a BA from Harpur College, SUNY, in 1961 and a PhD from the University of Pennsylvania in 1966. After postdoctoral work at the California Institute of Technology, he joined Princeton in 1968 as an assistant professor, becoming a professor of biochemistry in 1976. In 1979, he moved to the SUNY Stony Brook School of Medicine to chair the Department of Microbiology. He returned to Princeton in 1984. Between 1984 and 1996, he presided over a major expansion of Princeton's life sciences programs as chairman of the Department of Molecular Biology. From 1998 to 2002, Levine was president of The Rockefeller University.

Levine helped shape U.S. science priorities as chairman of an influential 1996 review panel on federal AIDS research funding. He also chaired the National Cancer Advisory Board, which advises the National Academy of Sciences and its Institute of Medicine on cancer policy. He was elected to the National Academy of Sciences in 1991 and to its Institute of Medicine in 1995. In April 2001, Levine received the first Albany Medical Center Prize in Medicine and Biomedical Research, the largest annual prize in science or medicine offered in the United States. The prize honors a physician or scientist whose work has led to significant advances in health care and scientific research.

In addition to the Albany Medical Center Prize, Levine has received numerous awards, including the 2009 American Cancer Society Medal of Honor, the 2008 Kirk A. Landon–AACR Prize for Basic Cancer Research, the 2005 Bristol-Myers Squibb Freedom to Discover Award, and the 2001 Alfred Knudson Award in Cancer Genetics from the National Cancer Institute. In 2000, he received the Keio Medical Science Prize from the Keio University Medical Science Fund in Japan, and the Medal for Outstanding Contributions to Biomedical Research from the Memorial Sloan-Kettering Cancer Center. He was named co-recipient of the 1999 Louisa Gross Horwitz Prize from Columbia University, and he received the 1999 General Motors Cancer Research Foundation's Charles F. Kettering Prize for the most outstanding recent contribution to the diagnosis or treatment of cancer. In 1998, he received the Paul Ehrlich and Ludwig Darmstaedter Prize, the Bertner Award from the University of Texas M. D. Anderson Cancer Center, and Eli Lilly's Clowes Award. Among his other awards are the 1993 Katharine Berkan Judd Award from Memorial Sloan-Kettering Cancer Center, the 1994 Bristol-Myers Squibb Award for Distinguished Achievement in Cancer Research, and the first Strang Award from the Strang Cancer Prevention Center, also in 1994.